CLAIMS

1.   A method for managing the availability of compiled data in a logically partitioned computer system having a plurality of processors, comprising the steps of:

    defining a plurality of logical partitions of said computer system, each logical partition having a respective processor resource assignment, wherein each task executing in said computer system is assigned to a respective one of said logical partitions and wherein the definition of a plurality of logical partitions may be dynamically altered;

    automatically determining first and second discrete subsets of said compiled data within a first logical partition, wherein said first discrete subset of said compiled data can be rebuilt using a first set of resources assigned to said first logical partition within at least one predetermined recovery time limit;

    automatically storing said second subset of said compiled data in a form which does not require rebuilding of said second subset;

    automatically detecting a configuration change to said first logical partition which alters the processor resource assignment of said first logical partition;

    automatically determining third and fourth discrete subsets of said compiled data within said first logical partition, wherein said third discrete subset of said compiled data can be rebuilt using a second set of resources assigned to said first logical partition within said at least one predetermined recovery time limit, said second set of resources being the set of resources after assigned to said first logical partition after said configuration change, said second set of resources being different from said first set of resources; and

    thereafter automatically storing said fourth subset of compiled data in a form which does not require rebuilding of said fourth subset.

2.   The method for managing the availability of compiled data of claim 1, wherein said compiled data comprises a plurality of database indexes.

1   3.   The method for managing the availability of compiled data of claim 1, wherein said

2   predetermined recovery time limit is a user specified recovery time limit.

1   4.   The method for managing the availability of compiled data of claim 1, wherein said

2   step of automatically storing said second subset of compiled data comprises logging changes

3   to said second subset of compiled data in at least one non-volatile storage device, and

4   wherein said step of automatically storing said fourth subset of compiled data comprises

5   logging changes to said fourth subset of compiled data in at least one non-volatile storage

6   device.

1   5.   The method for managing the availability of compiled data of claim 1, wherein:

2   if said step of automatically detecting a configuration change to said first logical

3   partition detects a configuration change which increases the processor resource assignment

4   of said first logical partition, then said step of automatically determining third and fourth

5   discrete subsets determines a fourth subset which is a subset of said second subset; and

6   if said step of automatically detecting a configuration change to said first logical

7   partition detects a configuration change which reduces the processor resource assignment of

8   said first logical partition, then said step of automatically determining third and fourth

9   discrete subsets determines a third subset which is a subset of said first subset.

1   6.   The method for managing the availability of compiled data of claim 1,

2   wherein said step of automatically determining first and second discrete subsets of

3   said compiled data comprises defining a plurality of buckets for said compiled data, each

4   bucket corresponding to a respective rebuild time; determining a respective cumulative

5   rebuild time for each bucket, said cumulative rebuild time representing the rebuild time using

6   said first set of resources of all compiled data in the respective bucket and in all buckets

7   corresponding to smaller rebuild times; and selecting the compiled data in all buckets having

8   cumulative rebuild times less than said predetermined recovery time limit for inclusion in

9   said first discrete subset; and

10   wherein said step of automatically determining third and fourth discrete subsets of

11   said compiled data comprises determining a respective cumulative rebuild time for each

12   bucket, said cumulative rebuild time representing the rebuild time using said second set of

13   resources of all compiled data in the respective bucket and in all buckets corresponding to

14   smaller rebuild times; and selecting the compiled data in all buckets having cumulative

15   rebuild times less than said predetermined recovery time limit for inclusion in said third

16   discrete subset.

1   7.   The method for managing the availability of compiled data of claim 6,

2   wherein each said bucket comprises at least one sub-bucket, each sub-bucket

3   corresponding to a processor resource;

4   wherein if said second set of resources is greater than first set, then said step of

5   automatically determining third and fourth discrete subsets comprises allocating additional

6   sub-buckets corresponding to the difference between said first set of resources and said

7   second set of resources, and transferring compiled data units from previously existing sub-

8   buckets to said additional sub-buckets; and

9   wherein is said second set of resources is less than said first set, then said step of

10   automatically determining third and fourth discrete subsets comprises removing sub-buckets

11   corresponding the difference between said first set of resources and said second set of

12   resources, and transferring compiled data units from the removed sub-buckets to remaining

13   sub-buckets.

1   8.   A program product for managing the availability of compiled data in a computer

2   system having a plurality of central processors and a dynamic logical partitioning

3   mechanism, said dynamic logical partitioning mechanism supporting a plurality of defined

4   logical partitions of said computer system, each logical partition having a respective

5   processor resource assignment, wherein each task executing in said computer system is

6   assigned to a respective one of said logical partitions and wherein the definition of a plurality

7   of logical partitions may be dynamically altered, said program product comprising a plurality

8   of processor executable instructions recorded on signal-bearing media, wherein said

9   instructions, when executed by at least one central processor of said computer system, cause

10   the system to perform the steps of:

11   automatically determining first and second discrete subsets of said compiled data

12   within a first logical partition, wherein said first discrete subset of said compiled data can be

13   rebuilt using a first set of resources assigned to said first logical partition within at least one

14   predetermined recovery time limit;

15   automatically storing said second subset of said compiled data in a form which does

16   not require rebuilding of said second subset;

17   automatically detecting a configuration change to said first logical partition which

18   alters the processor resource assignment of said first logical partition;

19   automatically determining third and fourth discrete subsets of said compiled data

20   within said first logical partition, wherein said third discrete subset of said compiled data can

21   be rebuilt using a second set of resources assigned to said first logical partition within said

22   at least one predetermined recovery time limit, said second set of resources being the set of

23   resources after assigned to said first logical partition after said configuration change, said

24   second set of resources being different from said first set of resources; and

25   thereafter automatically storing said fourth subset of compiled data in a form which

26   does not require rebuilding of said fourth subset.

1   9.   The program product for managing the availability of compiled data of claim 8,

2   wherein said compiled data comprises a plurality of database indexes.

3   10.   The program product for managing the availability of compiled data of claim 8,

4   wherein said predetermined recovery time limit is a user specified recovery time limit.

1   11.   The program product for managing the availability of compiled data of claim 8,

2   wherein said step of automatically storing said second subset of compiled data comprises

3   logging changes to said second subset of compiled data in at least one non-volatile storage

4   device, and wherein said step of automatically storing said fourth subset of compiled data

5   comprises logging changes to said fourth subset of compiled data in at least one non-volatile

6   storage device.

1   12.   The program product for managing the availability of compiled data of claim 8,

2   wherein:

3   if said step of automatically detecting a configuration change to said first logical

4   partition detects a configuration change which increases the processor resource assignment

5   of said first logical partition, then said step of automatically determining third and fourth

6   discrete subsets determines a fourth subset which is a subset of said second subset; and

7   if said step of automatically detecting a configuration change to said first logical

8   partition detects a configuration change which reduces the processor resource assignment of

9   said first logical partition, then said step of automatically determining third and fourth

10   discrete subsets determines a third subset which is a subset of said first subset.

1   13.   The program product for managing the availability of compiled data of claim 8,

2   wherein said step of automatically determining first and second discrete subsets of

3 said compiled data comprises defining a plurality of buckets for said compiled data, each

4 bucket corresponding to a respective rebuild time; determining a respective cumulative

5 rebuild time for each bucket, said cumulative rebuild time representing the rebuild time using

6 said first set of resources of all compiled data in the respective bucket and in all buckets

7 corresponding to smaller rebuild times; and selecting the compiled data in all buckets having

8 cumulative rebuild times less than said predetermined recovery time limit for inclusion in

9 said first discrete subset; and

10   wherein said step of automatically determining third and fourth discrete subsets of

11 said compiled data comprises determining a respective cumulative rebuild time for each

12 bucket, said cumulative rebuild time representing the rebuild time using said second set of

13 resources of all compiled data in the respective bucket and in all buckets corresponding to

14 smaller rebuild times; and selecting the compiled data in all buckets having cumulative

15 rebuild times less than said predetermined recovery time limit for inclusion in said third

16 discrete subset.

1   14.   The program product for managing the availability of compiled data of claim 13,

2   wherein each said bucket comprises at least one sub-bucket, each sub-bucket

3 corresponding to a processor resource;

4   wherein if said second set of resources is greater than first set, then said step of

5 automatically determining third and fourth discrete subsets comprises allocating additional

6 sub-buckets corresponding to the difference between said first set of resources and said

7 second set of resources, and transferring compiled data units from previously existing sub-

8 buckets to said additional sub-buckets; and

9   wherein is said second set of resources is less than said first set, then said step of

10 automatically determining third and fourth discrete subsets comprises removing sub-buckets

11 corresponding the difference between said first set of resources and said second set of

12 resources, and transferring compiled data units from the removed sub-buckets to remaining

13 sub-buckets.

14   15.   A computer system, comprising:

15   a plurality of central processing units;

16   a memory;

17   a logical partitioning mechanism supporting a plurality of defined logical partitions of

18   said computer system, each logical partition having a respective processor resource

19   assignment, wherein each task executing in said computer system is assigned to a respective

20   one of said logical partitions and wherein the definition of said logical partitions may be

21   dynamically altered;

22   a protection utility for compiled data in a first logical partition of said computer

23   system, wherein said protection utility:

24   (a) automatically computes rebuild times of discrete portions of said compiled

25   data according to a first configuration of said first logical partition to determine a first

26   subset of said compiled data to be stored in a form which does not require rebuilding,

27   said first subset being determined to meet a predetermined recovery time limit;

28   (b) automatically detects a configuration change to said first logical partition

29   which affects the time required to rebuild said compiled data, said configuration

30   change configuring said first logical partition according to a second configuration;

31   (c)   responsive to detecting said configuration change, computes rebuild

32   times of said discrete portions of said compiled data according to said second

33   configuration of said first logical partition; and

34   (d)   automatically determines a second subset of said compiled data to be

35   stored in a form which does not require rebuilding using said rebuild times of said

36   discrete portions of said compiled data according to said second configuration of said

37   first logical partition, said second subset being determined to meet said predetermined

38   recovery time; and

39   (e) automatically migrates compiled data stored in said form which does not

40   require rebuilding from said first subset to said second subset.

1   16.   The computer system of claim 15, wherein said compiled data comprises a plurality

2   of database indexes.

1   17.   The computer system of claim 15, wherein said form which does not require

2   rebuilding comprises one or more log records stored in a non-volatile storage device.